Efka variostop ®M.R.

NEEDLE POSITIONER

(REFERRING TO CONTROLS FROM SERIES 30 ON)

INSTRUCTION MANUAL

SPARE PARTS LISTS

No. 200078 english

Valid from: 11.93

EFKA VARIOSTOP needle positioners are approved by VDE and are thus submitted to a continuous production control. On their rating plate the VDE registration number 7564 is indicated.

Efka variostop — **controlled by electronic components**

Efka variostop — **components are interchangeable**

Efka variostop — **12 constant speeds**

Efka variostop — **speed range adjustable**

Efka variostop — **adjustable limitation of the maximum speed**

Efka variostop — **positioning speed easily adjustable**

Efka variostop — **contactless working position transmitter, no maintenance necessary**

Efka variostop — **exact positioning of the needle**

Efka variostop — **free machine pulley**

Efka variostop — **easy operation**

Efka variostop — **illuminated indication of functions**

Efka variostop — **connections for additional devices, such as thread trimmer, presser foot lift, automatic backtack etc. provided**

Efka variostop — **modern and reliable**

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1. Mounting

1.1 Installation of motor to the sewing machine

EFKA-VARIOSTOP needle positioners correspond in their dimensions to the German Industrial Standards DIN 42706 and to the dimensions used in the USA for the installation of motors. Installation in conformity with figure 1.

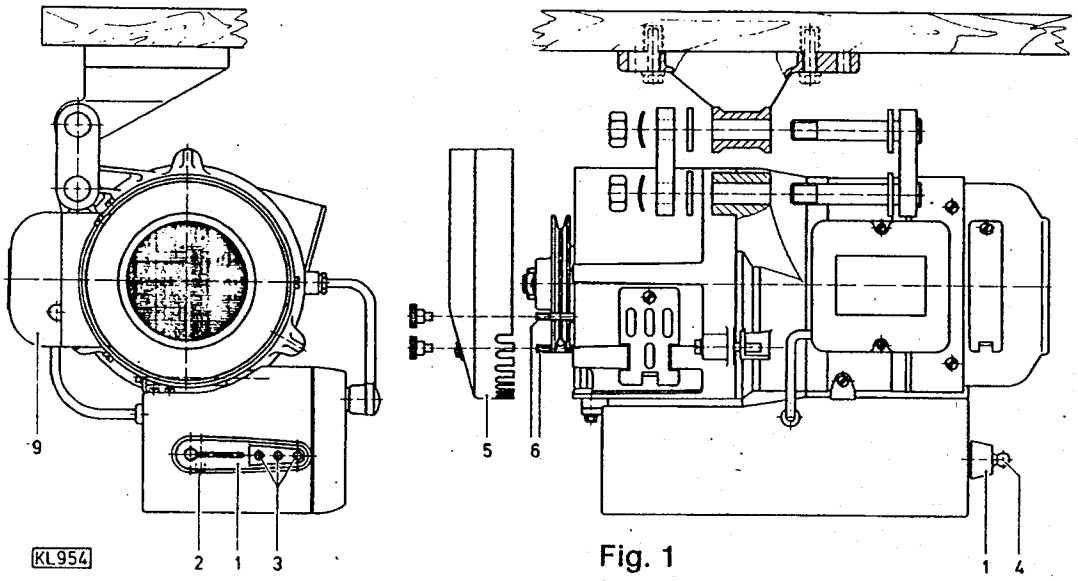


Fig. 1

The motor position is on principle of no importance. It depends upon the installation conditions on the machine. The **correct belt tension** results of the **motor own weight.** The action of the pitman rod should be tangential on the control lever (1). If this could not be obtained because of the motor swinging, the control lever (1) can be removed after unscrewing the locking screw (2). Three threaded holes (3) are on the control lever in order to lodge the spherical gudgeon. By removing, the way and the control force can be modified.

The belt-guard for pulleys up to 132 mm Ø is equipped with a belt guiding and a belt catching device in compliance with DIN 42703. The assembly and adjustment of these devices must be effected as follows (figure 1, 2):

The belt guiding device (10) must be assembled in the left guide slot (for anticlockwise rotating machines) or in the right guide slot (for clockwise rotating machines). The belt guiding (10) and belt catching devices (8) can be adjusted by shifting the bolts according to the size of the pulley used (11) and the screws must be fastened (indications as to size are imprinted on the inner part of the belt-guard near the slots). Screw the belt-guard (5) loosely to the motor and turn it to obtain a gap of 4 mm **maximally** between the bolt of the belt guiding device (10) and the belt (12). The belt-guard (5) can be swung in a large sphere. In case the swing sphere is not large enough, the two threaded studs (6) on the clutch housing can be displaced correspondingly. Fasten screws of the belt-guard.

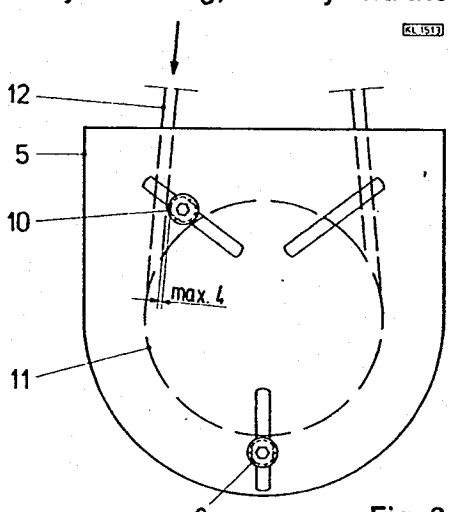


Fig. 2

Adjust belt guard for pulleys up to 180 mm Ø as follows (figure 2a, 2b):

If the needle positioner has up to now been equipped with a belt guard for pulleys up to

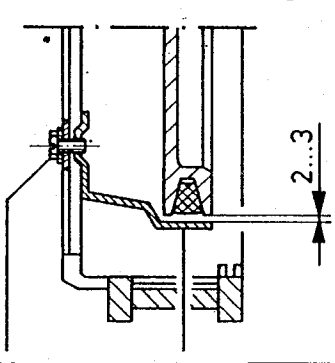


Fig. 2a

132 mm Ø, remove threaded studs (6) from motor first. Then mount fixation (13) delivered with the large belt guard by means of screws (14) and angle bracket (15) to the motor (after having loosely screwed the clamping bracket to the fixation). Loosen screw (16) and move angle (17) of the belt-catching device down. Place belt guard on the fixation (13), adjust it according to the belt guide and screw it down. Shift angle (17) in such a way that a gap of 2 . . . 3 mm is obtained between pulley and angle. Tighten screw (16).

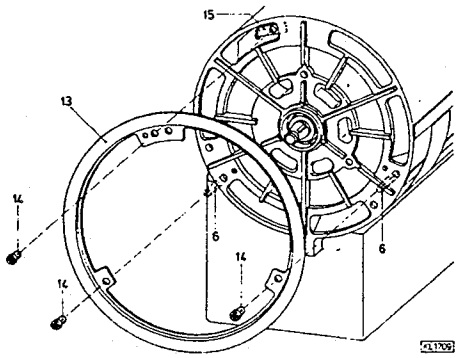


Fig. 2b

1.2 Installation of position transmitter type P 5-.

VARIOSTOP position transmitters to be mounted to the handwheel correspond with their dimensions to DIN 42705.

For the mounting of the position transmitter to the sewing machine, a handwheel, respectively a machine shaft with stud (1) as shown in figure 3 is necessary. It is advisable to provide the stud with a snap ring groove so that the stud surface should not be damaged by the threaded pins (2). Fasten a pin (3) or the like at an appropriate place of the sewing machine head. Dimensions in conformity with figure 3. Put rubber sleeve (4) on pin (3). Insert position transmitter so that the pin grips in the groove of the position transmitter. Pass plug (5) with cord (6) at a suitable place through table top (7). Cover hole in table top with sleeve (8).

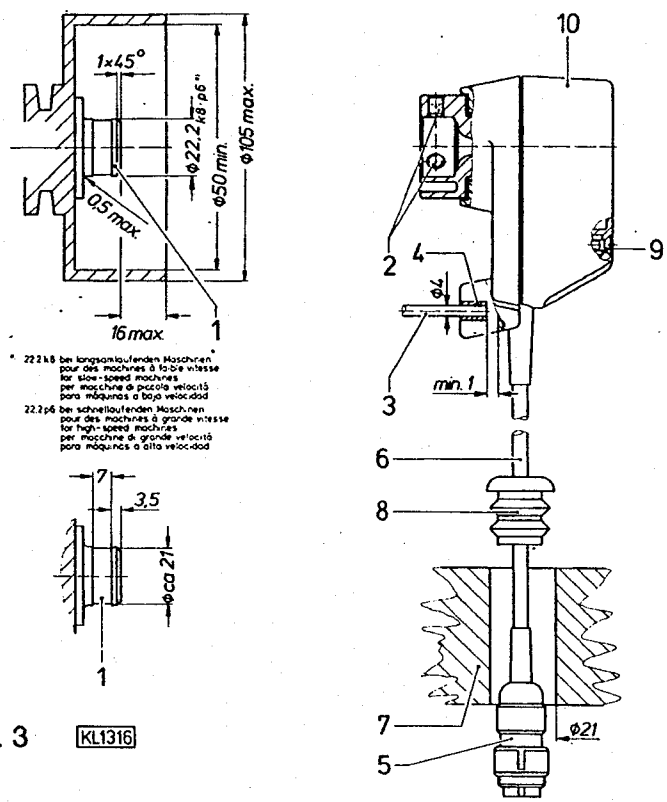


Fig. 3 KL1316

1.3 Setting of functional positions (stop positions)

Loosen screw (9), remove position transmitter cover (10) (figure 3). Turn handwheel to obtain functional position 1 and hold this position. Turn control disc (1) in conformity, with figure 4 so that the points on the disc serving as setting mark coincide with the edge of the hood (3) for protection against external light. Some types of position transmitters have double discs facilitating the adjustment of the slot width. The leading slot of the discs (1) determines the first functional position and the trailing slot the function of the thread trimmer (e.g. for pneumatically activated thread trimmer

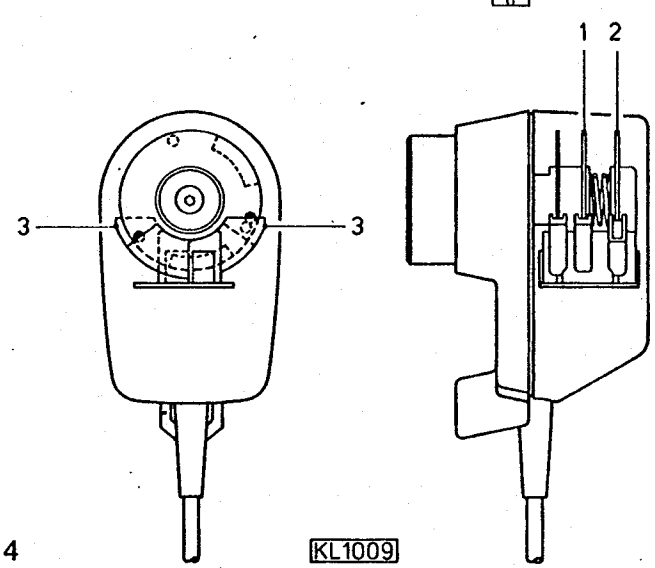


Fig. 4 KL1009

systems). The discs must eventually be turned in such a way to obtain the correct time for the thread trimmer activation.
Set functional position 2 respectively with control disc (2). After checking and possible correction of positions remount cover.

1.3.1 Number of functional positions

Both functional positions must be adjusted even if the second position only is used (e. g. for two-needle machines). In control boxes which do not have an external switch for reversing the functional positions a DIP-FIX switch identified by a label is fixed on the printed circuit board. This DIP-FIX switch is accessible after removal of the control box cover.

2. Electrical connections

2.1 Mains connection

Every needle positioner must be connected to the power line via a protective motor switch (opening on all poles, contact gap 3 mm). The maximum allowed value for the protective motor switch is indicated on fig. 5 under (1) (for three-phase current motors in star-delta connection).

The value under (2) indicates the nominal power input for the motor only. For the setting of the protective motor switch this value is without meaning.

Before making any connections to the mains check conformity of voltage with that indicated on the motor rating plate!

Faultless function is only guaranteed when deviation of voltage does not exceed a limit of + 6 %/-10 %.

The diagram for the connection to the mains is glued into the cover of the terminal box (9), see figure 1. In accordance with DIN VDE 0281 part 402 the mains connection cable between plug and protective motor switch must be as follows:

3 x 1.0 mm² for single-phase motors (H05 VV-F 3G1.0)
5 x 1.0 mm² for three-phase motors (H05 VV-F 5G1.0)

For single-phase and three-phase motors a cable 4 x 1.0 mm² (H05 VV-F 4G1.0) is to be installed to connect protective motor switch and motor. When connecting a single-phase motor, ensure that a jumper is installed into the protective motor switch according to the wiring diagram in the cover of the terminal box.

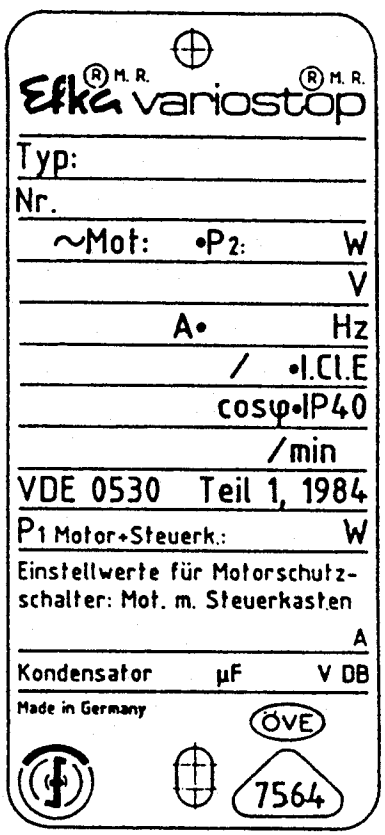


Fig. 5

EFKA-VARIOSTOP units with three-phase motor must not be connected to single-phase current. Use units with single-phase motor.

Unless otherwise ordered by the customer all 3-phase current motors are **star-connected**. In case a change from star to delta connection should become necessary the connections of the control must be changed in conformity with the above mentioned diagram in the cover of the terminal box, as otherwise the control would not carry live current. When switching back from delta to star, the connections must again be changed to avoid damage of the control by the higher voltage.

2.2 Safety standards

The complete unit (sewing machine, stand and drive) must be part of the safety standards according to VDE 0100. In order to prevent functional disturbances caused by electrostatic charges we recommend to connect the sewing machine head to the motor by a cord for potential compensation of at least 2.5 mm² (LIY, grey) a mounting facility in form of a screw is provided at the motor foot.

2.3 Connection of sewing light

According to DIN 57114/VDE 0114 standards the current supply for a sewing light must be separated from the motor. Therefore the motor winding tap as used so far has been eliminated for motors from motor number 10 000 001 - 10 999 999.

We recommend the use of our sewing light transformer or of our sewing light EFKALUX with integrated protective low voltage transformer. When ordering please state line voltage required.

We will still go on delivering our motors from motor number 11 000 001 - 11 999 999 with sewing light connection 12V or 6,3V, max. 20 W, into those countries where a winding tap is still allowed. When connecting a sewing light the special instructions of the corresponding country have to be observed because when using the light tap the full line voltage can be carried to ground.

2.4 Additional devices

Electrical connections of additional devices (such as thread trimmer, presser foot lift etc.) must be made in conformity with enclosed instructions for VARIOSTOP control.

Caution! When connecting additional devices and above all photocells the motor must be switched off.

2.5 Transformer in the control box

If the line voltage of control boxes equipped with multiple voltage transformers is changed by a displacement of the leads (6), see figure 6, the newly adjusted voltage has to be marked and the preceding one deleted (on the label besides the rating plate of the power pack).

3. Maintenance

Before doing any maintenance work disconnect positioning drive from the mains!

The filter in the ventilator cover must be kept free of deposits of dust, lint and thread ends to ensure a sufficient flow of cooling air. It is also important that the air filter is clean of oil to avoid lint sticking to the meshing and clogging it. Cleaning in that case would require the use of detergents. **Caution!** Remove fan housing only when motor is cut off! Especially in plants with very dusty atmosphere, it is advisable to clean both motor and clutch from time to time using compressed air. If necessary clutch may be taken off from motor as described in paragraph 4.4. Do not clean clutch and brake linings by any means.
Further maintenance is not necessary.

4. Repairs

Before doing any repair work disconnect positioning drive from the mains!

Use for eventual repairs original spare parts only!
In case devices are sent for repair, an exact description of the fault observed must be joined. In case of control box malfunction it is generally sufficient to exchange the control plate.

4.1 Exchange of control plate

Loosen both captive screws and remove control box cover on front side. If a harness is between face plate and printed circuit board, disconnection is obtained by pulling the connector on the printed circuit board. For control boxes where an external speed limitation has been mounted subsequently, untie printed circuit board fixed to face plate. The face plate with harness-connection can be secured in the two brackets mounted to the open control box. Loosen the two knurled screws (1) (figure 6) and remove control plate by pulling slightly the plug connection (2). Remount control plate in opposite order.

Caution! When exchanging the control plate against another plate with a different type designation the control box cover might as well be exchanged, so that the holes for sockets, switches, etc... correspond. In some special cases the power pack in the control box may also be different. In order to avoid wrong connections the control boxes are provided with code pins, allowing only the installation of certain control plates. Should the pins not correspond to the holes in the control plate, there is also no electrical correspondence between plate and control box.

Control boxes with presser foot lift connection generally have a pedal with 2 steps, when actuated backward, i. e. an additional step must be passed over before trimming.

In control boxes having no presser foot lift connection, the action of the additional step becomes inefficient when changing the position of the spring in the actuating mechanism. Figure 6 shows the guiding device (8) for the spring and the positioning points A and B (A=with intermediate step, B=without intermediate step). Depending upon the control box or plate, the spring is to be put in one or in the other position.

4.2 Checking of power pack

4.2.1 Printed circuit board of power pack

A green light emitting diode (4) is located on the small printed circuit board of the auxiliary box in the control box. The diode (4) indicates the perfect running of the auxiliary box. It is visible after removal of the control plate and must lighten when the motor is on. The p. c. b. can be replaced together with the connection socket for the plug connection (2). Leads (9) and (10) perform the connection at the transformer.

4.2.2 Transformer

If diode (4) does not lighten as described in paragraph 4.2.1 please check transformer (7). The transformer must furnish at the sockets of leads (9) and (10) the alternating voltage indicated on its data plate (mostly 24V). Without load the voltage rises by approx. 10%.

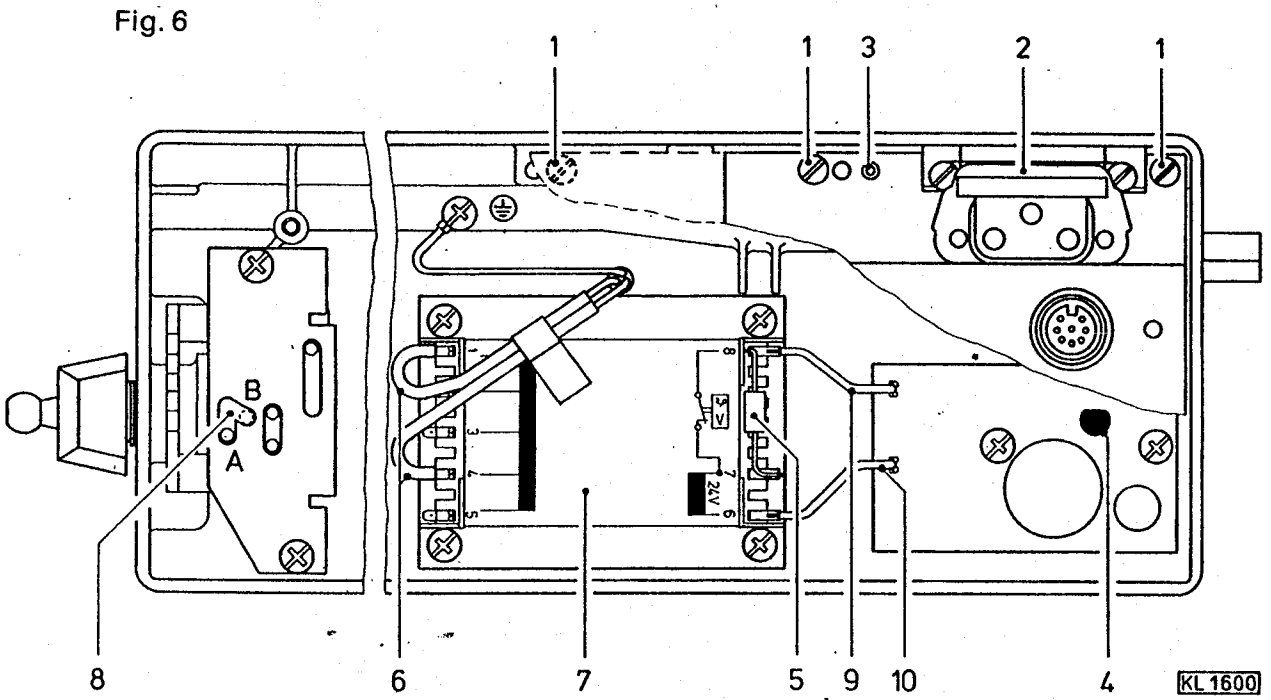
The transformer is equipped with a micro-temperature fuse (5) soldered on the transformer binders. If damaged, unsolder and replace the fuse (part no. 500924).

4.2.3 Primary fuse

Power pack type N13 is equipped with a safety fuse that is connected to the primary side of the transformer and is accessible from the back of the control box. If the safety fuse is defective, a new fuse link has to be inserted.

Mains voltage 95...120V = fuse link DIN 41662 — T2,5 5x20 (part no. 1300923)
Mains voltage 190...240V = fuse link DIN 41662 — T1,25 5x20 (part no. 1300922)
Mains voltage 250...290V = fuse link T1,25 6,3x32 (part no. 502663)

Fig. 6



4.3 Exchange of clutch and brake discs

Should after a long time of use an exchange become necessary please proceed in conformity with figure 8.

Remove belt guard and pulley, remove spring washer from shaft (8).

Screw centering sleeve (Z) (part no. 300616) onto the shaft to its stop (figure 7).

This measure is necessary for the protection of the shaft bearing and for a correct adjustment of the clutch air gap **"A"**.

Remove all 4 screws (16) and (17). Take off clutch.

Remove lateral cover from clutch housing.

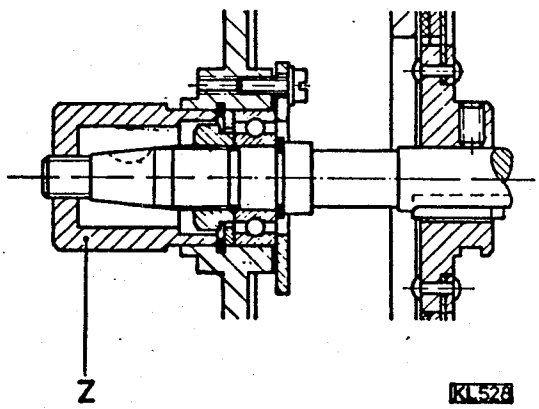


Fig. 7

Pull off bearing (21), remove retaining ring (22).

Caution! In case of a replacement of the bearing (21) only the special ball-bearing with special lubrification (part no. 1000096) shall be used!

Remove the three screws (19), loosen cable clamp (20) and take out clutch magnet (7). **Caution!** Pull out carefully the leads of the clutch and brake. Check whether the surfaces of the clutch magnet are still smooth. If during operation the clutch disc was already in metallic contact with the magnet the danger exists that the pole faces of the latter are damaged (scoring). If so the magnet must be replaced or faced to ensure a safe function of the clutch.

Loosen the 2 threaded pins (24) in hub (23) of the clutch disc and pull off clutch disc from clutch shaft with a puller.

Remove brake disc as clutch disc.

Put new brake disc onto the clutch shaft and push it towards the brake magnet (12) until its linings touch slightly the brake surfaces of the brake magnet. **Caution!** When mounting the brake disc do not exert pressure **but** on the hub to avoid damage of the spring action of the disc.

Tighten both threaded pins (25) in hub (26).

Put new clutch disc onto clutch shaft and push it towards the brake disc until its hub touches slightly that of the brake disc.
Caution! Do not exert pressure but on the hub (23).

Fasten clutch magnet (7) with all three screws (19) in the clutch housing. Pull leads carefully out again.

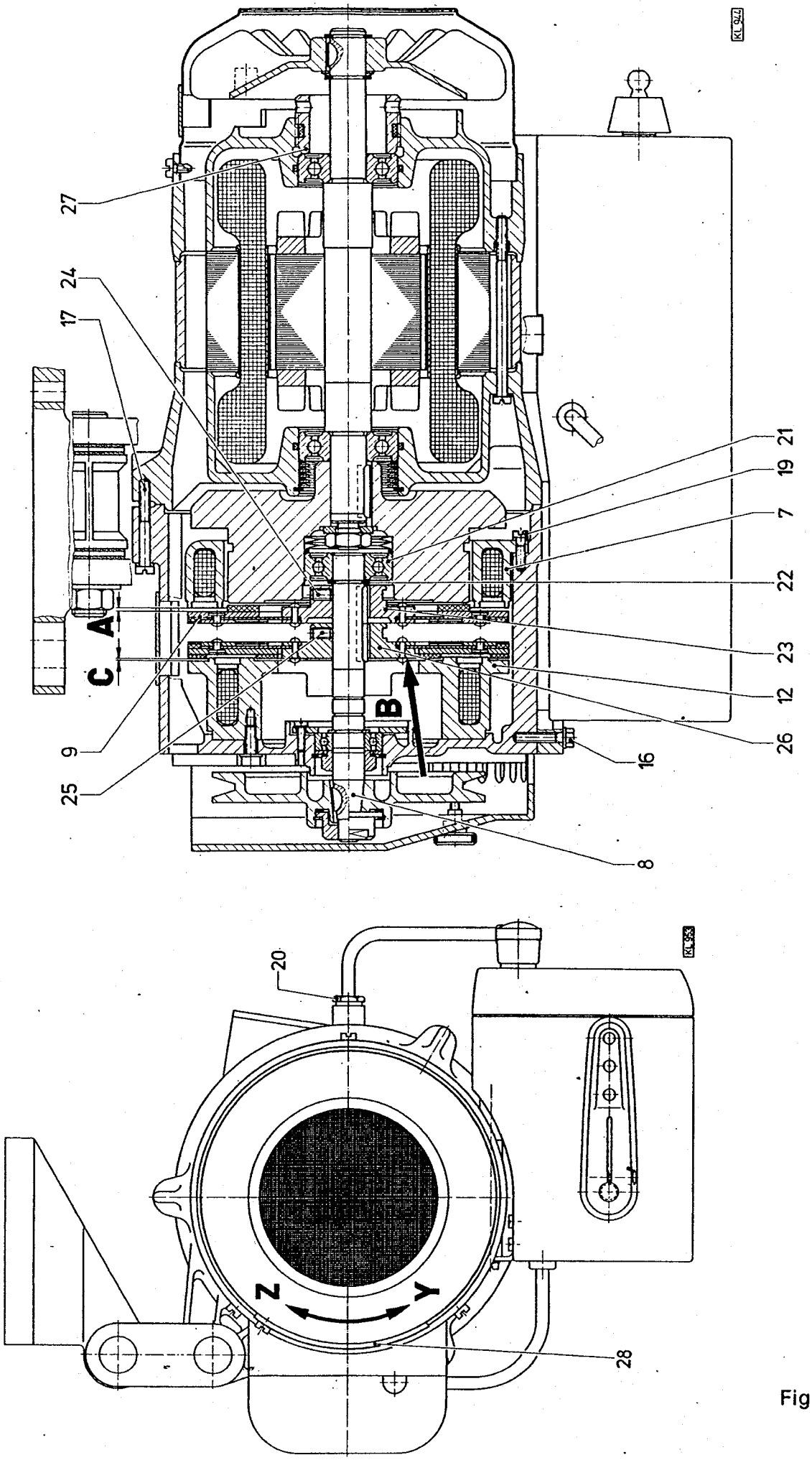


Fig. 8

Mount retaining ring (22) and ball bearing (21) on clutch shaft (8).

Tighten cable clamp (20) again.

Now pull the clutch disc to the rear in direction of the clutch magnet — **pull only at the hub** — until **air gap "A"** from 0,8 to 0,9 mm is obtained at the nearest point. Measuring is done with a feeler gauge trough the lateral opening in the clutch housing.

Tighten threaded pins (24) in the hub (23) of the clutch disc.

Remove cover (28) from the ventilator housing of the motor.

Through the opening so obtained insert a round steel pin (approx. 5 mm diameter) in one of the bores setting sleeve (27).

Turn setting sleeve (27) 2 to 3 times in the direction of arrow **"Y"** (as there are 6 bores in the sleeve, use pin 6 times to obtain a full turn).

Mount clutch to the motor. **Caution!** Take care that the springs and packing necessary for the support of bearing (21) will be put **before** into the bore of the fly-wheel. The sequence of mounting and the correct position is shown in figure 8. Lubricate bore of the fly-wheel with the molykote-paste added to each replacement disc.

Fix clutch with all 4 screws (16) and (17) to motor and control box. Insert plugs of clutch, position transmitter etc. in the relevant sockets in the control box.

Take centering sleeve on clutch shaft off again.

4.4 Checking and setting of clutch and brake

4.4.1 Check brake setting

The contact of the brake should be very slight. It must be possible to turn manually the clutch shaft at the beginning of the threaded part for fixing the pulley. If the shaft cannot or with difficulty be turned, or if a brake air gap **"C"** is wider than 0,15 mm (measurable through lateral opening in clutch housing) the brake must be adjusted as follows:

4.4.2 **Brake setting** (without previous dismantling of the clutch from the motor)

Remove pulley and lateral opening in clutch housing with Allen key 3L DIN 911 (VARIOSTOP accessory). Loosen through this opening both threaded pins (25) in the brake disc hub (26).

Is the **brake too tightly adjusted** put the tip of a punch onto hub (26) in the direction of arrow **"B"**. Introduce the punch through the air openings of the clutch shaft. Hit with the grip of a screwdriver **slightly** on the punch and push back brake disc turning simultaneously the clutch shaft until the brake runs free.

Is the **brake too widely adjusted** (air gap **"C"** between brake linings and brake magnet more than 0,15 mm) put the tip of a tapered punch (8 mm diameter) between the hubs of the brake and clutch disc (26 and 23). Hit with the grip of a screwdriver **slightly** on the punch and space the hub of the brake disc from the fixed hub of the clutch disc until the contact of the brake is slight as described under paragraph 4.5.1. **Caution!** Take care not to damage clutch and brake discs. Do not exert pressure but on the hub.

Tighten both threaded pins (25 and 26).
Remount cover and pulley.

4.4.3 Clutch setting

A setting sleeve (27) is installed in the ventilator endshield of the motor by which the motor shaft with fly-wheel may be displaced. By turning to the right (direction of arrow "**Z**") the clutch clearance is decreased and by turning to the left increased (direction of arrow "**Y**").

Introduce a round steel pin (approx. 5 mm diameter) through the ventilator housing of the **motor** into one of the bores of setting sleeve (27). Motor **not running!**

Turn setting sleeve (27) in direction of arrow „**Z**" simultaneously rotating the pulley by hand until there will be a **slight** frictional contact between clutch disc and motor fly-wheel. This contact is noticeable when the ventilator of the motor is slightly engaged and starts also to turn.

Now turn setting sleeve (27) in reverse direction (direction of arrow "**Y**") by one section (note position of pin and turn until pin in the next bore will be in the same position). Should there still be a frictional contact between clutch linings and fly-wheel the clearance will adjust itself by the first actuation of the motor.

Caution! Turning the setting sleeve too far in direction "**Z**" will bring about a deflection and thus a damage of the clutch disc by the fly-wheel.

By turning the setting sleeve too far in direction "**Y**" the following faults may occur:

a) The sleeve has been set back to such an extent that the operative air gap "**A**" of the clutch disc is close to zero. When rotating the metallic part of the clutch disc will be in frictional contact with the housing of the clutch magnet (eventual formation of sparks) and the clutch disc will be destroyed.

b) The sleeve has been set back to such an extent that the operative air gap "**A**" is zero or a little less than zero. In this case when the clutch is actuated the clutch disc will come into a rigid contact with the housing of the clutch magnet. Consequently the motor will be chocked as the clutch shaft cannot rotate. The motor protection switch will cut the current. Is there no protection switch or is it wrongly set the motor winding will burn through.

c) Is the sleeve set back to such an extent that the operative air gap "**A**" is far less than zero, the clutch disc will also come into a rigid contact with the housing of the clutch magnet. In this case the normally present frictional contact is, however, totally missing and the motor is idling.

Mount lateral covers to clutch housing and ventilator housing. Put on V-belt. The motor is ready for use.

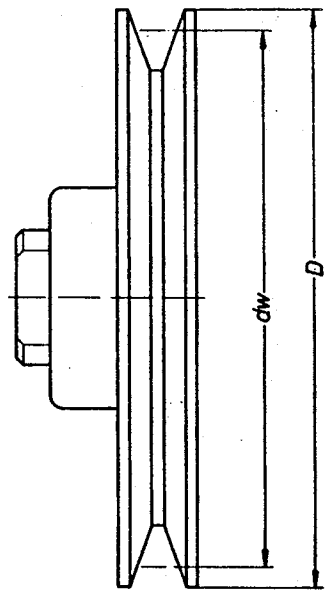
4.5 Checking of clutch magnet

The value of resistance of the standard clutch magnet coil must comprise 8.7 Ω, that of the reinforced clutch magnet coil 4.7 Ω, measured at plug pins 2 and 3 in cold condition.

4.6 Checking of brake magnet

The value of resistance of the brake magnet coil must comprise 5.6 Ω measured at plug pins 1 and 2 in cold condition.

5. Pulleys in conformity with DIN 42692



(Kl. 825)

Fig. 9

effective measure d_w	outer Ø D	admiss. deviation from d_w and D
58	65	+1,0
63	67	+1,0
67	71	+1,1
71	75	+1,1
75	79	+1,2
80	84	+1,3
85	89	+1,4
90	94	+1,4
95	99	+1,5
100	104	+1,6
106	110	+1,7
112	116	+1,8
118	122	+1,9
125	129	+2,0
132	136	+2,1
140	144	+2,2

The effective measures given are valid for the use of endless V-belts 10 in conformity with DIN 2215 or of narrow V-belts SPZ in conformity with DIN 7753, page 1. When using endless V-belts 8 in conformity with DIN 2215, d_w is reduced in all dimensions by approx. 6 mm.

Caution! Due to the increased value of the moment of inertia pulleys from dimensions (d_w) 180 onwards must be provided with lightening bores as follows:

a) pulleys d_w 180: 4 bores 42 mm Ø
b) pulleys d_w 200: 6 bores 48 mm Ø

6. Check list in case of malfunction

Defect	Possible cause	Remedy
Motor does not start after having thrown the mains switch	Power supply cord (socket, plug, protection switch, motor) not or wrongly connected	Correct mains connection in conformity with paragraph 2.1
	Power supply cord (socket, plug, cord, protection switch) defective	Replace defective parts
	Fuses smoldered	Replace fuses
	Phase failure in the mains	Eliminate failure
	Motor winding interrupted	Have motor repaired by the manufacturer
Motor runs, but after having actuated the sewing machine pedal the machine does no start	Plug for position transmitter or clutch not inserted	Plug in
	Cord of position transmitter interrupted, position transmitter defective	Repair or exchange faulty parts
	Using the external actuator: Plug not inserted, cord of the actuator defective	Insert plug, repair cord or exchange external actuator
	Clutch magnet or magnet cord defective, connection in plug interrupted	Replace clutch magnet or repair connection
	In machines with safety switches avoiding a hazardous run of the machine: switch not correctly actuated (e. g. after tilting the machine head switch not fully engaged) or defective, cord to switch interrupted	Checks switch for correct function, replace switch or cord if necessary
	Control box at motor terminal not or wrongly connected	Correct connections in conformity with schematics within the terminal cover
	Power pack defective, functional indicator does not lighten	Check power pack and repair defective part
	Clutch air gap and/or brake setting too narrow or after a long time of use clutch lining worn down or defective	Adjust clutch and/or brake in conformity with paragraph 4.4, if necessary renew clutch and brake discs
	Control plate defective	Replace control plate
Power pack defective, functional indicator does not lighten	No tension at the low tension side of the transformer	Replace transformer (choose right type!)
	Primary fuse resp. transformer fuse defective	Replace fuse according to paragraph 4.2.2 or 4.2.3

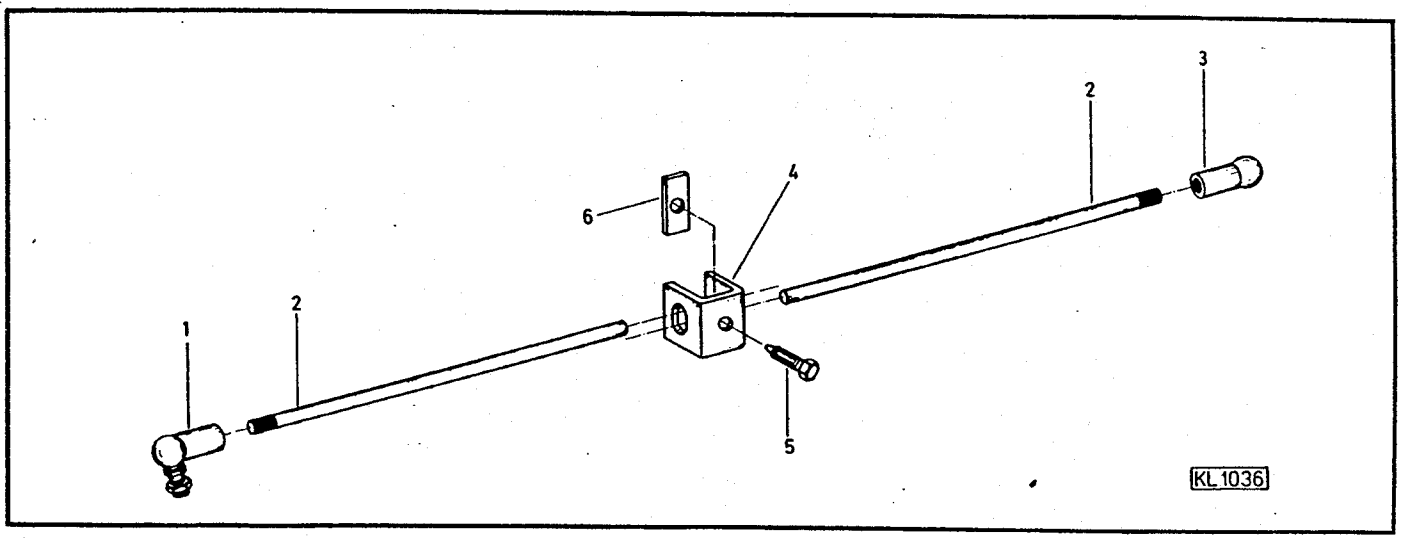
Defect	Possible cause	Remedy
	Printed circuit board of power pack defective	Replace printed circuit board with connection
Motor and machine run, but the needle does not go to its upper position or the machine does not start to run again	Sewing machine pedal is jammed or is wrongly adjusted	Repair pedal or adjust it correctly
	External actuation or its cord defective	Replace external actuation
	In machines with safety switch at thread trimmer or other additional devices: Switch not correctly actuated or defective, cord to switch interrupted	Check switch for correct function and actuation, if necessary replace switch, actuating means or cord
	Position transmitter defective	Replace position transmitter
	Control plate defective	Replace control plate
Repeated cut off of motor protection switch	Value for motor protection switch was set too low or fuses used were wrong	Adjust switch in conformity with motor rating plate resp. replace fuses
	Phase failure in mains	Eliminate failure
	Protection switch defective	Replace switch
	Mains connection between protection switch and motor too weak or defective	Replace cord
	Motor winding at terminal wrongly connected	Correct connection in conformity with schematics within the terminal cover
	Machine or devices (e. g. thread trimmer) heavy running or seized	Repair machine respectively devices
	Brake setting too narrow	Adjust brake in conformity with paragraph 4.4.2
	Friction between clutch disc and clutch magnet	Adjust clutch properly, replace clutch disc if necessary
	Motor winding defective	Have motor repaired by manufacturer
Motor decreases speed considerably or stops entirely	Voltage too low	Have power supply checked and stabilized
	Machine or devices (e. g. thread trimmer) heavy running or seized	Repair machine respectively devices
	Clutch air gap and/or brake setting too narrow or after a long time of use clutch lining worn down or defective	Adjust clutch and/or brake in conformity with paragraph 4.4, if necessary renew brake and clutch discs
	Power rating of motor too low for particular operation	Exchange motor for another with higher power rating
	Control plate defective	Replace control plate

Defect	Possible cause	Remedy
Acceleration of the sewing machine is too slow, pull force too weak	Motor power for machine or operation too weak	Replace motor by one of higher power
	Line voltage too low	Care for correct line voltage
	Operative clutch air gap too wide	Adjust clutch in conformity with paragraph 4.4.3
	Pole faces of clutch magnet damaged by clutch disc (scoring)	Replace or face clutch magnet
Motor is heating up too much. It should be observed that insolation class E applicable to the EFKA VARIOSTOP motor permits according to VDE 0530 a maximum temperature of +120°C. This corresponds to a surface temperature of approx. +100°C. Yet temperatures of about +50°C can not longer be determined by touch	Air absorption filter filled with lint, after a long time of use air channels within motor and clutch filled with lint	Clean filter, if necessary, take off clutch in conformity with paragraph 4.3, clean air channels in motor and clutch
	Machine or devices (e. g. thread trimmer) heavy running or sized	Repair machine or devices
	Brake setting too narrow	Adjust brake in conformity with paragraph 4.4.2
Machine starts to run after throwing mains switch without pedal having been actuated. Stop only possible by switching off	Machine pedal is jammed or actuates by own weight contacts	Replace or repair pedal
	No clutch clearance	Adjust clutch clearance in conformity with paragraph 4.4.3
	Control plate defective Notice: detach clutch plug from control box. Control plate is only defective when machines stops	Replace control plate
Machine runs at first actuation at full speed. Stop only possible by switching off	Cord of position transmitter defective, connections in position transmitter or plug broken	Repair cord or connections respectively
	Position transmitter defective	Replace position transmitter
	Control plate defective. Notice: control plate is only then defective when exchange of position transmitter is not remedy	Replace control plate
Machine stops in second position only (e. g. thread lever up)	DIP-FIX switch on control plate is open	Close DIP-FIX switch
Machine stops irregularly or continues running at positioning speed after stop signal is given. Stop only possible by switching off	Hub of position transmitter on machine shaft insecurely fixed	Fix hub in conformity with paragraph 1.2
	Tension of V-belt not taut enough. V-belt slips	Correct tension in conformity with paragraph 1.1
	Positioning speed (speed of machine shaft on which position transmitter is mounted) too high	Adjust correct positioning speed according to "Instructions for VARIOSTOP control type..."
	Machine pedal is jammed or actuates by own weight contacts	Repair pedal, displace eventually the ball pin at the control box actuator to inner location

Defect	Possible cause	Remedy
	Brake magnet or brake magnet line defective, connection in plug interrupted	Replace brake magnet or repair connection
	Position transmitter defective	Replace position transmitter
	Control plate defective. Notice: control plate is only then defective when by adjustment of the correct positioning speed and/or exchange of the position transmitter fault is not corrected	Replace control plate
Intermediate speed ranges are fully or partly missing	Maladjustment of potentiometer for intermediate speed ranges at control box	Adjust potentiometer according to "instructions for VARIOSTOP control type..."
	Control plate defective	Replace control plate
The maximum speed of the sewing machine is not reached	Potentiometer for limitation of maximum speed is effective	Turn potentiometer to the right until the stop limit
No additional functions (e. g. trimming, presser foot lifting etc.) Caution: before changing any parts, the connections should be checked with a voltmeter to ensure that signal is present (for example at the socket of the control box, at the cords to the magnets or selenoid valves etc.)	Machine pedal is jammed or wrongly adjusted	Adjust respectively repair pedal
	In machines with safety switches at trimmer or other additional devices: switch not correctly actuated or defective, cord to switch interrupted	Check switch for correct function and adjust accordingly, if necessary replace switch, actuating means or cord
	Additional device not or wrongly connected, cord wrong or defective. Cord not or wrongly connected to the socket in the control box or in the additional device.	Correct connections according to "instructions for VARIOSTOP control type...", if necessary replace cord
	Additional device defective (e. g. actuating eccentric maladjusted, magnet or solenoid valve is jammed or burnt, knife jams etc.)	Repair device
	Control plate and/or additional control means defective	Replace control plate and/or additional control means. Caution: in this case make sure that before using the replacement device, actuating means and cord are checked. A burnt solenoid valve, a short circuit in the cord will produce the same fault in the replaced control plate
Faulty additional function such as: trimming at the wrong moment (e. g. when starting to sew), hazardous trimming etc. Caution: before changing any parts, the connections should be checked with a voltmeter to ensure that signal is present (e. g. sockets in control box or auxiliary box, cord to magnets or solenoid valves)	Faulty connection of additional device, cord defective or wrong, connection to the wrong socket in the control box or additional device	Correct connections according to "instructions for VARIOSTOP control type...", if necessary replace cord
	Additional device defective (e. g. actuating eccentric maladjusted, magnet or solenoid valve worn out etc.)	Repair additional device

Defect	Possible cause	Remedy
	Position 2 (needle up) too tighly adjusted. In various trimming systems it may happen that the trimming operation will not be terminated, the knife remains in its cutting position. When starting to sew knife trims repeatedly. When starting to sew at full speed breakage of the trimmer may occur.	Adjust position 2 according to paragraph 1.3. When repeated trimming will occur check positioning speed additionally
	Wrong position transmitter or control discs in position transmitter wrongly adjusted. Notice: the wrong sense of rotation (also in machines with clockwise rotation) or wrongly adjusted control will inevitbly produce failures.	Check adjustment of the control discs in the position transmitter, if necessary readjust according to paragraph 1.3. Check sense of rotation. Replace position transmitter if defective
	Position transmitter defective	Replace position transmitter
	Control plate and/or additional control defective	Replace control plate and/or additional control. Caution: in this case make absolutely sure that the replacement devices, connections, actuating means and cord will be checked before use.

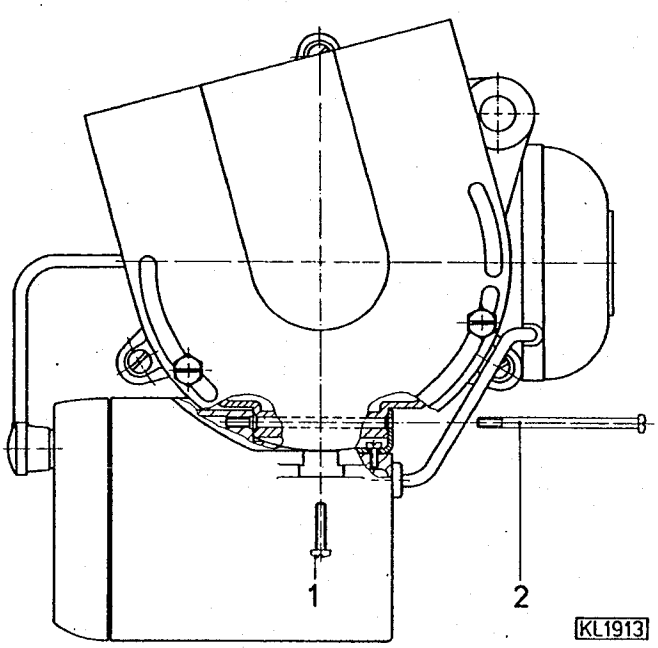
7. Spare parts lists



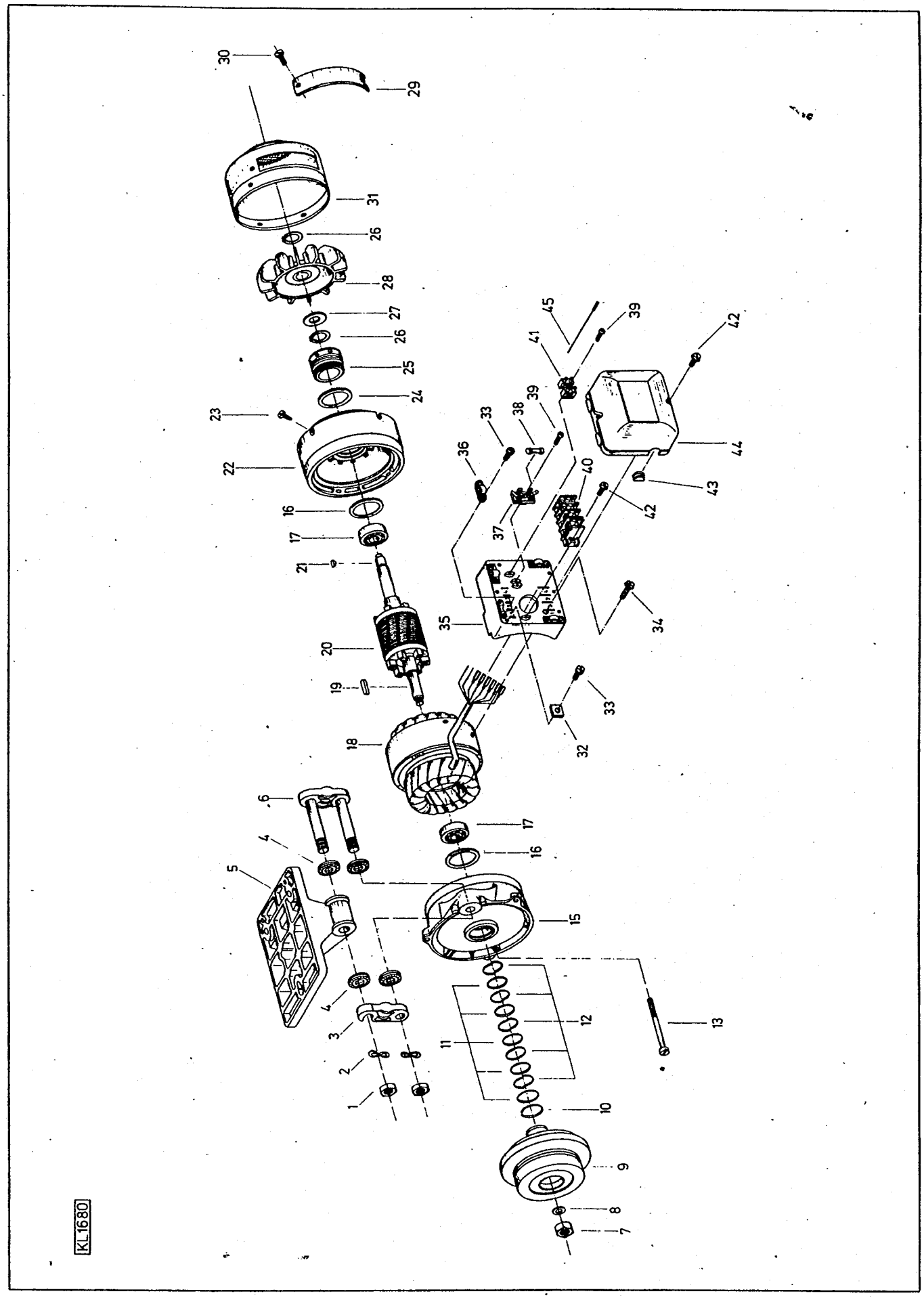
Spare parts list for pitman rod

no.	designation	part no.	no.	designation	part no.
1	angle link A 10 M 6	1108410	5	hexagon screw B M6x16 DIN 564 star knob	1300651 600347
2	rod 220 mm 245 mm	300722 300788	6	pressure sheet metal	202909
3	ball socket A 10	100013		pitman rod complete with rods 220 mm, hexagon screw rods 220 mm, star knob rods 245 mm, hexagon screw	 1104458 1105173 1105175
4	U-sheet-metal	202857			

Spare parts list for mounting parts for control box



no.	designation	part no.
1	screw M 5x20	600004
2	screw M 5 x 75/12	600418


KL1680

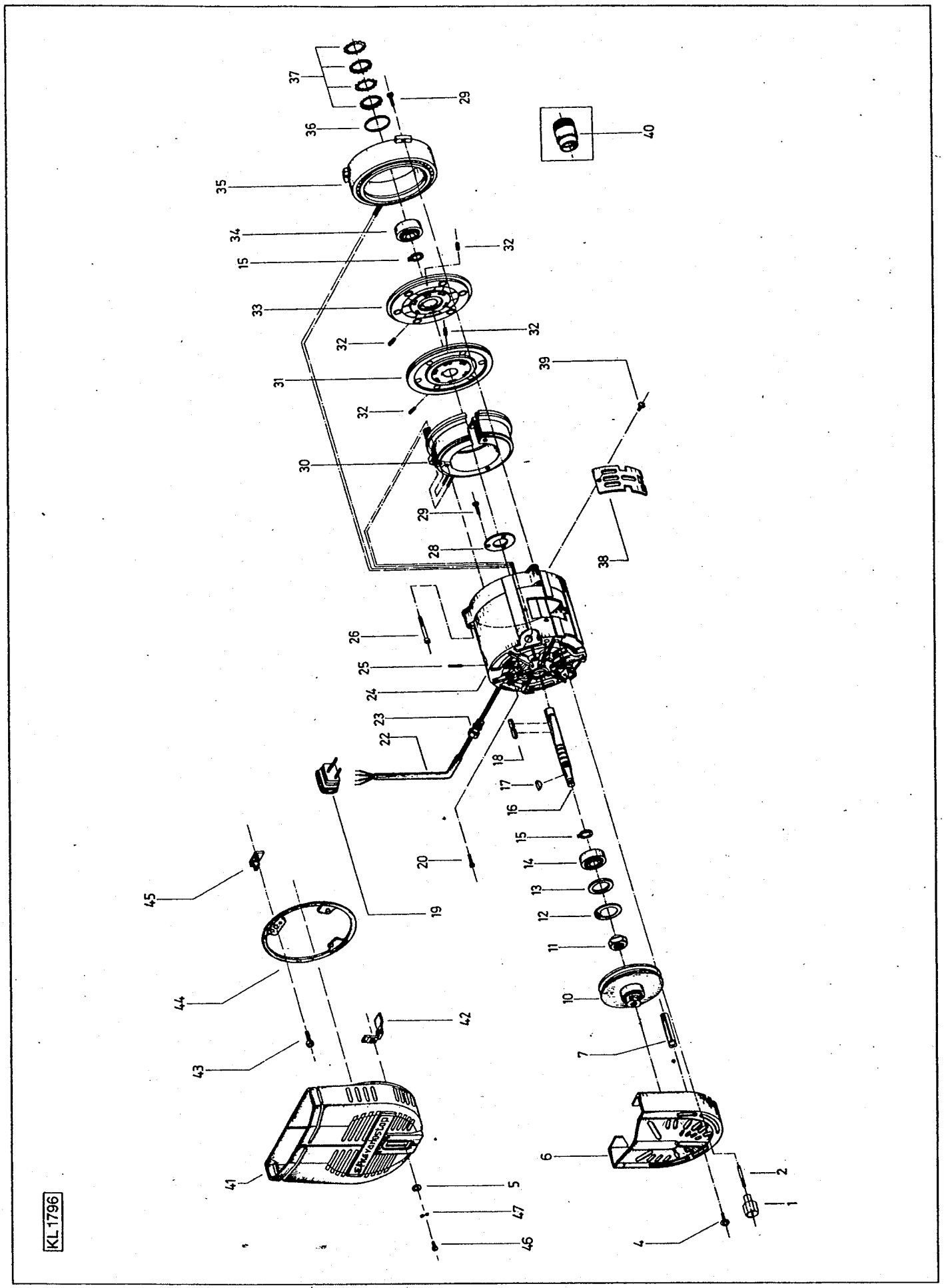
Spare parts list for induction motor

(motor number 10 000 001-11 999 999)

no.	designation	part no.
1	hexagon nut M 16 DIN 934	1300662
2	spring washer B 16 DIN 137	1300663
3	flange II	1200025[1])[7]) 1200229[2])[7]) 1200220[3])[7]) 1200511[1])[8]) 1200889[2])[8]) 1200485[3])[8])
4	toothed disc	403
5	motor foot	1108399[1]) 1108400[2]) 1100265[3])
6	flange I with bolts	1103486[1])[7]) 1107687[2])[7]) 1100264[3])[7]) 1104411[1])[8]) 1110747[2])[8]) 1100266[3])[8])
7	hexagon nut M 12x1,5 DIN 936	1300291
8	washer	200887
9	fly wheel	525
10	snap ring 47x1,75 DIN 472	1300594
11	washer	201607
12	spacer	204456
13	screw M5x 85/20 M5x100/20	600406 600407
15	end bell (front)	1200248[1]) 1200249[2]) 1200418[3])
16	o-ring	900491
17	ball bearing 6303 2Z	1000097
18	stator complete (please state voltage, frequency, speed, power rating, voltage for sew light[4]), motor number, motor type and colour of paint[1])[2]))	
19	spring A 5x5x25 DIN 6885	1300362
20	rotor complete (please state voltage, frequency speed, power rating, motor number and motor type)	
21	lock spring 4x5 DIN 6888	1300294
22	end bell (rear)	1200250[1]) 1200251[2]) 1200422[3])
23	grooved screw	600267
24	o-ring	900480
25	threaded sleeve	300404
26	snap ring 17x1 DIN471	1300336
27	spacer	201339
28	fan[5])	764 765[6]) 100055
29	cover	1200236[1]) 1200237[2]) 1200184[3])
30	screw M 5x7	6000457

no.	designation	part no.
31	fan housing	1200242[1]) 1200243[2]) 1200201[3]) 1200244[1])[6]) 1200245[2])[6]) 1200662[3])[6])
	cover in fan housing[5])	100838
32	clamp disc	206253
33	cylinder screw M 4x14 Z4 DIN 84	1300579
34	cylinder screw M 5x20 Z4 DIN 84	1300936
35	terminal board for 4-pole terminal strip	1200234[1]) 1200235[2]) 1200204[3])
	terminal board for 6-pole terminal strip	1200252[1]) 1200253[2])
36	strain relief clamp	100481
37	fuse holder	500015
38	fuse link for sew light 12 V 20 W	1300602
	fuse link for sew light 6,3 V 20 W	1300603
39	grooved screw 2.9x11.5 spiral screw M3x16	600174 600344
40	4-pole terminal strip 6-pole terminal strip	1104534 1102100
41	terminal strip	500787
42	screw M4x16x6	0600011
43	grommet	900704
42...44	terminal cover complete	1110123[1]) 1110124[2]) 1100268[3])
45	lead with connector with binder	1101384 1107500
	capacitor (please state motor type and voltage)	
	angle bracket for capacitor	1200843[1]) 1200844[2]) 1200233[3])
	screw M4x10	600338
	turnbuckle	1100189
	tightening strap	204426
	rubber plate	201610
	assortment of small parts for motor and control box	1104894

[1]) painted in grey-green
[2]) painted in grey-beige
[3]) painted in dusty grey
[4]) with tapped stator winding
[5]) The motor is also balanced at the fan. A replaced fan must again be balanced.
[6]) für motor types V....A, V....LA
[7]) distance between the bolts: 50 mm
[8]) distance between the bolts: 80 mm

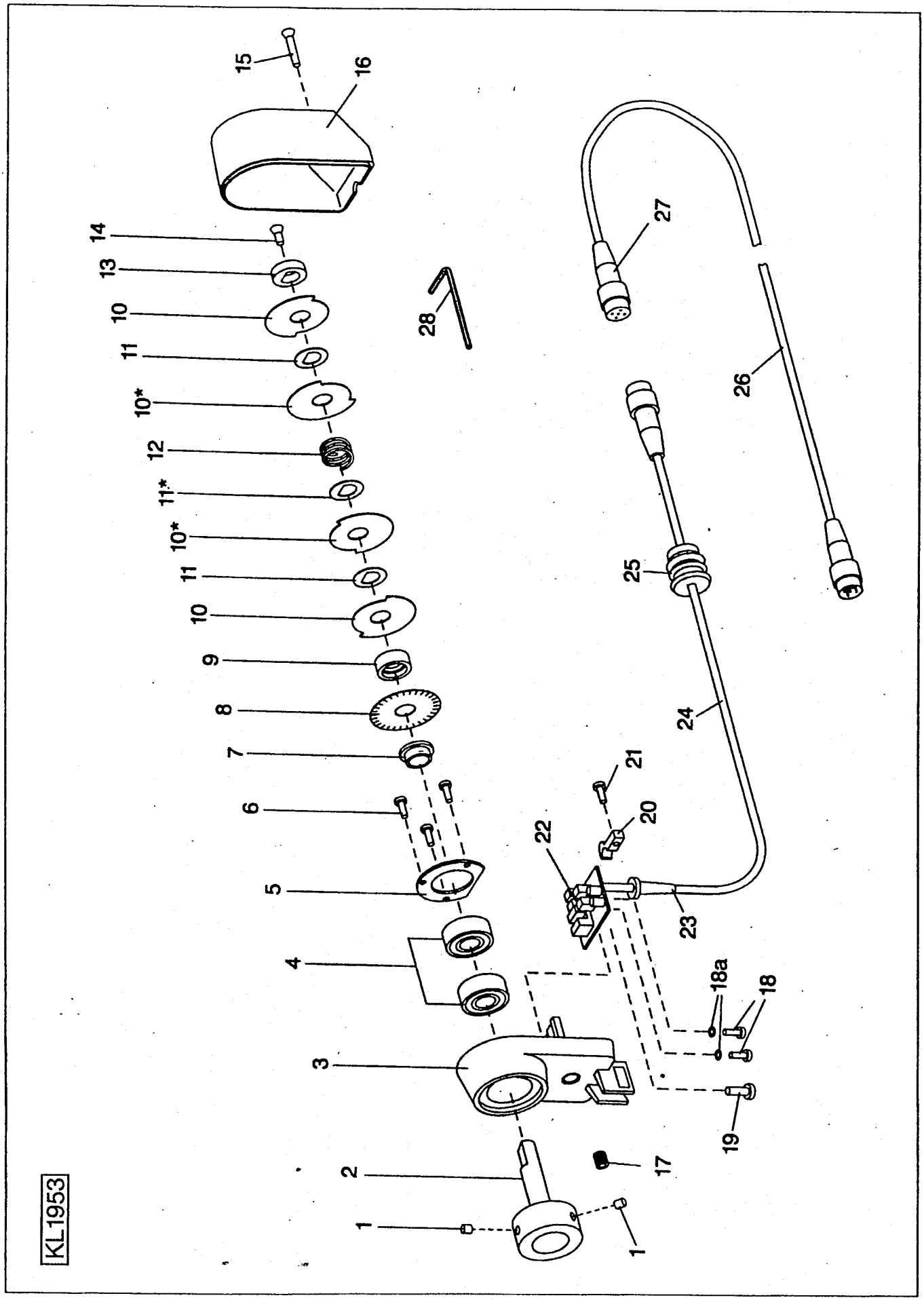

KL1796

Spare parts list for electromagnetic clutch

no.	designation	part no.
1	hexagon nut	300735
2	threaded stud M 5x35 DIN 938	1300430
4	screw with washer 4,2x16	600393
5	washer	201506
6	belt-guard cover	100889[1]) 100926[2]) 100072[3])
7	bolt	100893
	belt-guard complete[7]) (no. 4, 6, 7)	1107251[1]) 1107526[2])
10	pulley DIN 42692-L	sizes 63...140
11	hexagon nut	600304
12	snap ring J 32x1,2 V	600243
13	washer	600277
14	ball bearing	1000095
15	snap ring 15x1 DIN 471	1300335
16	clutch shaft	300784
17	lock spring 4x5 DIN 6888	1300294
18	spring A 4x4x18 DIN6885	1300403
19	3-pole plug	1107783
20	screw M 5x16	600409
22	flexible insulating tubing DIN 40621 B6x0.6x180 black B6x0.6x180 blue B7x0.7x820 blue	1300964 1300963 1300883
23	threaded sleeve	1101632
24	clutch end bell	1200246[4]) 1200247[5]) 1200561[6])
25	threaded stud M 5x20 DIN 915	1301032
26	screw M5x40/15	600408
28	plate	206157

no.	designation	part no.
29	screw M4x13	600432
30	brake magnet complete	1103058
31	brake disc complete	3101780
32	threaded stud M6x10 DIN 916	1300404
33	clutch disc complete[9]) normal version reinforced version	3101781 3102510
34	special ball-bearing	1000096
35	clutch magnet complete[9]) normal version, leads 150 mm reinforced version, leads 150 mm reinforced version, leads 800 mm	1101614 1102481 1102509
36	o-ring	900721
37	spring	700118
38	cover	1200238[4]) 1200239[5]) 1200540[6])
39	screw M 5x7	600457
40	centering sleeve	300616
41	belt-guard cover left + right	1105750
42	angle	204052
43	screw M 5x10	600413
44	fixation	204050
45	clamping bracket	204051
46	hexagon screw M4x8 Sz DIN 933	1300429
47	spring washer A4 DIN 137	1300246
	belt-guart complete[8]) (no. 5/41...47)	7900012

[1]) grey
[2]) beige
[3]) dusty grey
[4]) painted in grey-green
[5]) painted in grey-beige
[6]) painted in dusty grey
[7]) for pulleys up to 132 mms ; (d_W)
[8]) for pulleys up to 180 mms ; (d_W)
[9]) The clutch design can be deduced from the order no. for the complete clutch (see name plate on the back-side of the clutch housing): 7792-001-...– normal version
7792-002-...– reinforced version


KL1953
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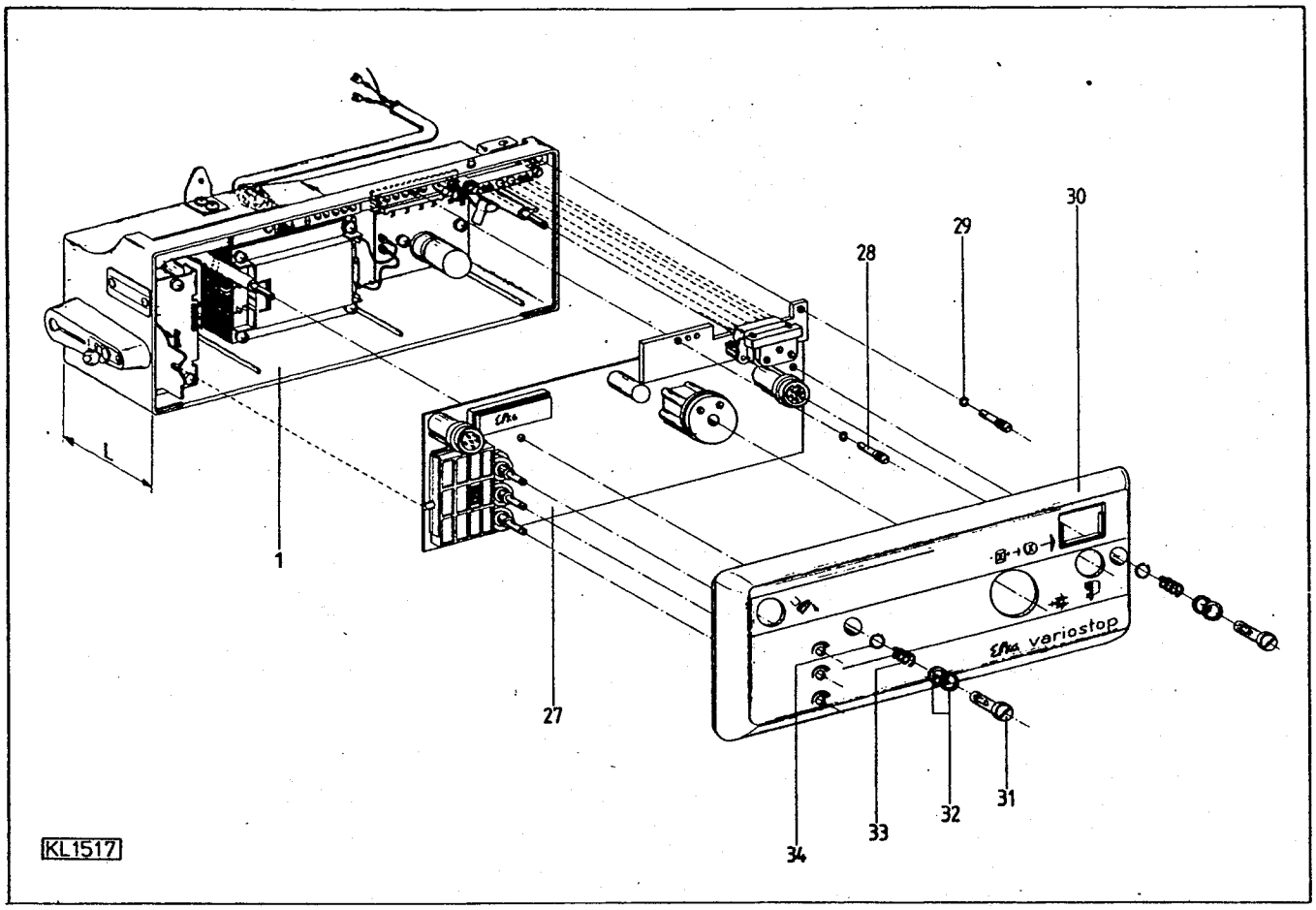
Spare parts list for position transmitter type P 5-.

Pos.	designation	part no.
1	set screw M 6x8 DIN 913	1300274
2	shaft	0300717
3	support with insert	1104521
4	grooved ball bearing	1000128
5	clamp disc	0203879
6	grooved screw 3.5x9.5	0600211
1+2+3+4+5+6	support pre-assembled	1104402
7	spacing sleeve	0100644
8	impulse disc	0206492
9	spacing sleeve	0100645
10	positioning disc (please state the number indicated on the disc)	
11	washer 0.2 mm	0204114
12	pressure spring	0700110
13	pressure sleeve	0100670
14	countersunk screw M4 x 10	1300742
15	countersunk screw BM4 x 20 x 10	1300731
16	cover pre-assembled	0100984[1]) 0101398[2])

Pos.	designation	part no.
17	rubber sleeve	0900535
18	screw EJOT-PT KB 30x10 WN1452KOT10	0600024
18a	washer 3.2	1300631
19	grooved screw 2.9 x 6.5	1300740
20	strain relief clamp	0100316
21	screw EJOT-PT KB30x10 WN1452 KOT 10	0600024
22	printed circuit board	1111561
23	anti-kink bush	0100650
24	cord with plug and anti-kink bush	0802823
22+23+24	printed circuit board P5-. P5-21	1111562 1111923
25	bushing tube	0100442
26	extension cord	1111584
27	socket connector MAK 8100 SN	0501545
28	Allan key 3L DIN 911	1300646

[1]) black
[2]) dusty grey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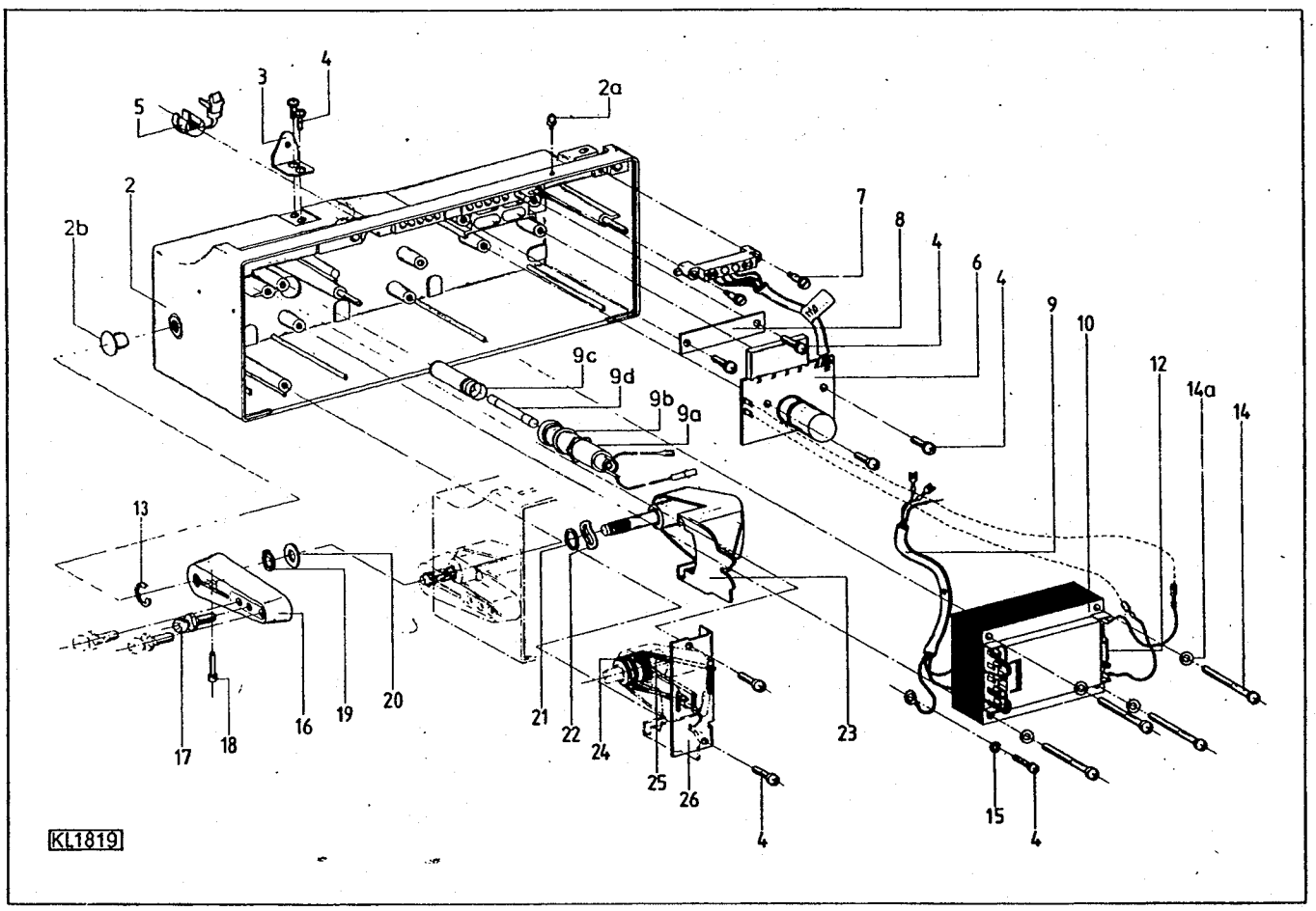
KL1517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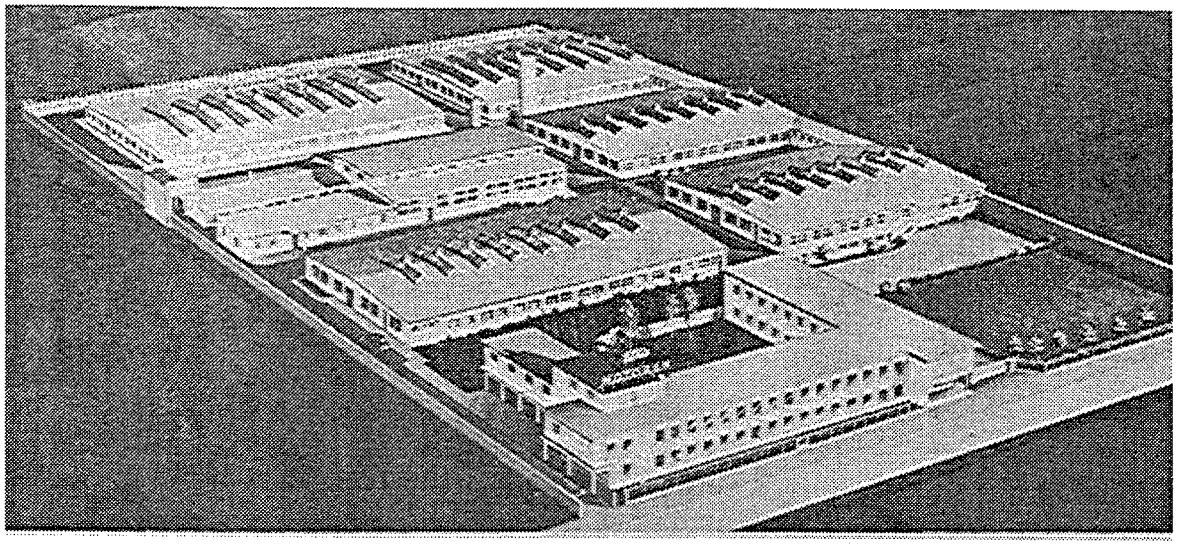
KL1819

Spare parts list for control box

no.	designation	part no.
1	power pack complete (please state type, voltage and colour of paint[1])[2]))	
2	power pack housing (please state dimension L, power pack type and colour of paint[1])[2]))	
2a	knob	100709
2b	cover cap	100872[3])
3	clip angle 27 mm long 41 mm long	203872 204652
4	spiral screw M4x10	600338
5	grommet	101067
6	printed board assembly with leads and socket case (please state part no.)	
7	pan head screw M 3x10 DIN 923	1300706
8	fastening tin	203876
9	power cord complete (please state power pack type)	
9a	fuse holder with leads and plug	1107134[4])
9b	spring washer	201339[4])
9c	fuse head[4]) (please state voltage)	
9d	fuse link (see 4.2.3) DIN 41662 — T2,5 5x20 DIN 41662 — T1,25 5x20 T1,25 6,3x32	 1300923[4]) 1300922[4]) 502663[4])
	protective foil for mains transformer	900883[4])
10	mains transformer with leads (please state voltage and power pack type)	
12	micro-temperature fuse	500924
13	retaining washer DIN 6799-6	1300924
14	spiral screw M4x42 M4x50	600348[5]) 600390[4])

no.	designation	part no.
14a	washer 4.3 DIN 433	1300240[4])
15	single coil spring washer B 4 DIN 127	1300470
16	outer lever	1200001[1]) 1200196[2])
17	ball stud A 10 DIN 71803	1300948
18	cylinder screw M 4x16 DIN 912	1300705
19	retaining snap ring 10x1 DIN 471	1300598
20	washer 10x16x1	201469
21	washer	204388
22	spacer	201023
23	inner lever with shaft	1200002[6])
24	spring ∅ 2.5 mm	700111
25	spring ∅ 2.8 mm	700102
26	conducting and stopping plate	204032
27	printed board assembly, no. 28 and 29 included (please state type)	
28-29	slotted shoulder screw with spring washer	600391
30	cover complete, no. 31 to 34 included (please state control type and colour of paint[1])[2]))	
31	slotted round nut	300707
32	washer	203928
33	pressure spring	700104
34	retaining snap ring	600384

[1]) painted in grey-green
[2]) painted in grey-beige
[3]) for power pack type N06
[4]) for power pack type N13
[5]) for power packs type N05...N07
[6]) order no. 13, too (if not yet provided)



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